

REMARKS

In the Office Action, claims 1-27 were rejected. By the present Response, claims 1, 17, 23, 26 and 27 have been amended to more particularly point out and distinctly claim the present technique. Moreover, claim 25 is canceled without prejudice. Upon entry of the amendments, claims 1-24, 26 and 27 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-4, 6-15, 17, 19, 20 and 22 under 35 U.S.C. §103(a) as being unpatentable over Holzman (US 4,872,502) in view of Olah (US 2,511,479). Applicants respectfully assert the claims, as pending, are presently patentable over the cited references.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal*

Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). In other words, the artisan, viewing only the collective teachings of the references, must find it obvious to selectively pick and choose various elements and/or concepts from the cited references to arrive at the claimed invention. *See id.* Moreover, the Federal Circuit has warned that the Examiner must not, “fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *In re Dembiczak*, F.3d 994, 999, 50 U.S.P.Q.2d 52 (Fed. Cir. 1999) (quoting *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983)). Avoiding hindsight reconstruction is especially important regarding less technologically complex inventions, where the very ease with which the invention can be understood may prompt one employ such hindsight. *See id.*

Independent Claim 1

Beginning with claim 1, this claim recites, *inter alia*, “an oil sump to house lubricant for the bearing element,” as well as, “at least one motor driven electric fan mounted to the bearing housing, wherein the at least one fan is adapted to transfer heat from the bearing housing by forced convection.” The Examiner concedes that the Holzman reference, “does not clearly teach the oil from the sump being used to lubricate the bearings.” In order to satisfy this deficiency, the Examiner presents the Olah reference and states, “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the gearbox of Holzman such that the lubricant from the oil sump is supplied to the bearing, as taught by Olah, in order to lubricate and cool the bearings.” Applicants respectfully assert the Examiner’s reference combination would not be sufficient to render obvious claim 1 as currently pending.

Assuming, *arguendo*, the Examiner finds a reference combination that discloses all of the elements of a rejected claim, the Examiner must still present a convincing line

of logic as to why the reference combination would be obvious to a skilled artisan. The instant references disclose contrasting teachings with respect to the fan assemblies respectively disclosed therein. The Olah reference discloses a fan 24 mounted to the worm shaft 6. *See Olah*, column 2, lines 40-43. There is no reason to believe the cited fan 24 is electric or motor driven in any manner. Rather, the rotation of the cited fan 24 is controlled by the rotation of the worm shaft 6. *See id.* As such, the cited fan 24 is driven by the worm shaft 6 and not by any semblance of a motor. Accordingly, Applicants respectfully assert the two references teach distinct fan and sump assemblies, and, as such, the skilled artisan would not combine fan assembly of the Holzman reference with the sump assembly of the Olah reference. Applicants respectfully assert that the Examiner should not use the instant application as a road map to combine the cited references to reach the instant claim. Therefore, Applicants respectfully assert that independent claim 1 and its respective dependent claims 2-16 are, as pending, patentable over the cited reference combination. Reconsideration and allowance are respectfully requested.

Independent Claim 17

The next independent claim rejected by the Examiner, independent claim 17, recites, *inter alia*, the step of, “adapting [a] logic controller to receive a signal from the temperature sensor and to operate the fan at various speeds in response to the signal received.” The Examiner concedes that the Holzman reference does not disclose a variable speed fan. With reference to claim 16, the Examiner states, “Holzman does not disclose the fan as being configured to operate at variable speeds depending on the output of the temperature sensor.” The Examiner attempts to satisfy this deficiency, again with respect to claim 16, by presenting the Müller (US 4,806,832) reference. Applicants respectfully assert that the Holzman-Müller-Olah reference would fail to render obvious the instant claim, namely, independent claim 17.

As argued above, even if the Examiner is able to present references that disclose all of the features of a recited claim, the Examiner must still present a convincing line of reasoning as to why the alleged combination would be obvious to an artisan. Moreover, the Examiner must not employ hindsight reconstruction, and use the patentee's teachings as a roadmap for constructing the reference combination.

The Examiner contends that, "[the] Müller reference discloses a fan having a control circuit for varying its rotation speed based on a temperature sensor." Additionally, the Examiner states, "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the control circuit of Holzman such that the fan has multiple operating speeds . . ." Even if the Examiner's contention is taken as true, the Müller reference must provide some teaching or reasoning as to why it would be employed in conjunction with any semblance of a bearing. As stated above, the Examiner concedes that the Holzman reference merely discloses a fan that operates in a binary manner. As such, a simple on-off circuit design would teach away from the variable fan of the instant claims.

Additionally, the Müller reference states, "[a]t present there is frequently a requirement associated with the ventilation or, respectively, cooling of *electronic equipment for noise reasons* that the fan provides power in fact required for the cooling, that is the fan reduces its rotation speed in case of a lower power requirement in order to achieve a minimum *noise development*." See Müller, column 1, lines 64-68; column 2, lines 1-2 (emphasis added). In electronic equipment, excess heat is produced as function of inefficiencies and resistance in the transmission of electric current. This is in contrast to the mechanically generated heat of concern with respect to bearing elements. Accordingly, Applicants respectfully assert that the Examiner is, at best, using the instant application as a roadmap for finding the motivation to combine the cited references. Such hindsight reconstruction is improper support for a valid obviousness rejection.

Lastly, the Examiner must also present appropriate references to support his rejection. Specifically, the Examiner must present "analogous" prior art. *See* M.P.E.P. §2141.01(a). Applicants respectfully assert that the Müller reference is non-analogous prior art.

In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must: 1) either be in the field of the applicant's endeavor or, if not, then; 2) be reasonably pertinent to the particular problem with which the inventor was concerned. *See In re Oetiker*, 977 F.2d 1443, 1446; 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992). A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which deals, logically would have commended itself to an inventor's attention considering his problem. *Wang Laboratories, Inc. v. Toshiba Corp.*, 993 F.2d 858 26 U.S.P.Q.2d 1767 (Fed. Cir. 1993). Applicants respectfully assert the Müller reference does not satisfy these threshold burdens.

As stated above, the Müller reference relates to *noise reduction* of cooling systems in *electronic equipment*. *See* Müller, column 1, lines 64-68; column 2, lines 1-2. As such, the field the Müller reference relates to is electronic equipment and not bearing elements. Heat generation due to flowing electrical current is a different field of endeavor when compared to heat generated by the mechanical interaction of bearing elements. Thus, the Müller reference fails to meet the first prong of the *In re Oetiker* test. Additionally, the Müller reference clearly states *noise reduction* is the particular problem with which the inventor was concerned. *See id.* The dissipation of heat within bearing assemblies is not explicitly discussed within the Müller reference. Accordingly, the Müller reference fails to satisfy the second prong of the *In re Oetiker* test. At best, the Examiner is employing hindsight reconstruction to make the combination. Such combination of elements from non-analogous sources, in a manner that reconstructs Applicant's invention only with the benefit of hindsight, is insufficient to present a *prima*

facie case of obviousness. See *In re Oetiker*, 977 F.2d at 1447, 24 U.S.P.Q.2d at 1446. For the above reasons, Applicants respectfully assert that independent claim 17 and its respective dependent claims 18-22 are patentable over the Holzman-Müller-Olah reference combination. Reconsideration and allowance are respectfully requested.

Independent Claim 23

In the Office Action, the Examiner rejected claims 23, 24, 26 and 27 under 35 U.S.C. §103(a) as being unpatentable over Holzman (US 4,872,502) in view of Olah (US 2,511,479) and in further view of Woodroffe et al. (US 6,425,293). Applicants respectfully assert the instant claims, as pending, are patentable over the cited reference combination.

Independent claim 23, recites, *inter alia*, “a means for variably controlling the amount of forced air flow in correlation with the temperature discerned of the element of the bearing.” As stated above, the Examiner concedes that the Holzman reference does not disclose this feature. Additionally, the Examiner presents no reason to believe that this feature is disclosed within the Woodroffe et al. reference. However, the Examiner contends, with reference to claim 16, that the Holzman reference in light of the Müller would have made it, “. . . obvious to ordinary one of ordinary skill in the art the time the invention was made to modify the control circuit Holzman such that the fan has multiple operation speeds, as taught by Müller, in order to provide adequate cooling of the housing without consuming excessive electricity.”

As argued above, the Holzman-Müller reference combination fails to properly buttress a §103 rejection for at least two reasons. First, Applicants respectfully assert that the reference combination lacks the necessary motivation to combine needed for a proper §103 rejection. Second, the Müller reference is non-analogous prior art. Again, as discussed above, these conclusions are supported by the fact that the Müller reference relates to a technique for *noise reduction* of cooling systems in *electronic equipment*. See

Müller, column 1, lines 64-68; column 2, lines 1-2. For the above reasons, Applicants respectfully assert that independent claim 23, as pending, and its respective dependent claim 24 are patentable over the presented references. Reconsideration and allowance are respectfully requested.

Independent Claim 26

The final independent claim rejected by the Examiner, independent claim 26, recites, *inter alia*, “a logic controller adapted to receive a signal from each temperature sensor and to operate at least one of the corresponding fans at various speeds according to the received signal.” As stated above, the Examiner concedes that the Holzman reference does not disclose this element. To satisfy a similar deficiency the Examiner, with respect to claim 16, presented the Müller reference. However, as argued above, the Holzman reference is not appropriately combined with the Müller reference because the combination lacks the necessary motivation to combine and also because the Müller reference is non-analogous prior art. Such a conclusion, as argued above, is supported by the fact that Müller discloses a technique for *noise reduction* of cooling systems in *electronic equipment*. See Müller, column 1, lines 64-68; column 2, lines 1-2.

Additionally, independent claim 26 recites, “a plurality of fans affixed to the housing of each bearing.” The Examiner concedes, with reference to claims 11-15 and 22, that, “Holzman does not disclose the gear reduction housing having a pair of fans for transferring heat from the housing.” However, the Examiner contends, again, with reference to claim 11-15 and 22, “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to provide two fans on the housing, since it has been held that the mere duplication of essential working parts of a device involves only routine skill in the art.”

Applicants respectfully assert that a given element recited in a claim should not be read independent of other elements also recited within the same claim. For example,

claim 26 not only recites a plurality of fans, but also recites operating at least one of the corresponding fans at various speeds according to the received signal. As such, the instant claim does more than merely duplicate the essential working parts of a device; the device being the fan and logic circuit as disclosed by Holzman. Rather, the instant claim recites a plurality of fans operated by a logic circuit in a variable manner. For the above reasons, Applicants respectfully assert that independent claim 26 and its respective dependent claim 27 are patentable and in condition for allowance. Reconsideration and allowance are respectfully requested.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Twice Amended) A bearing comprising:
 - a temperature conducting housing;
 - a bearing element disposed within the housing; an oil sump to house lubricant for the bearing element; and
 - at least one motor driven electric fan mounted to the bearing housing, wherein the at least one fan is adapted to transfer heat from the bearing housing by forced convection.

17. (Twice Amended) A method for controlling the temperature of a bearing having a housing and a bearing element disposed within the housing, the method comprising:
 - mounting at least one fan on the bearing housing to remove heat from bearing element lubricant disposed within the bearing housing;
 - disposing a temperature sensor within the bearing housing;
 - electrically coupling a logic controller between the at least one fan and the temperature sensor; and
 - adapting the logic controller to receive a signal from the temperature sensor and to operate the fan at various speeds in response to the signal received.

23. (Amended) A bearing comprising:
 - a housing;
 - a bearing element disposed within the housing;
 - means for introducing forced air flow over an exterior surface of the bearing housing;
 - means for discerning a temperature of an element of the bearing; and
 - means for variably controlling the amount of forced air flow in correlation with the temperature discerned of the element of the bearing.

26. (Amended) A system comprising:
a plurality of bearings, each bearing including a thermally conductive housing, a bearing element disposed within the housing;
a plurality of fans ~~at least one fan~~ affixed to the housing of each bearing;
a temperature sensor disposed within the housing of each bearing and corresponding to the ~~at least one fan~~ fans affixed on the same bearing; and
a logic controller adapted to receive a signal from each temperature sensor and to operate at least one of the corresponding ~~at least one fan~~ fans at various speeds according to the received signal.

27. (Amended) The system of claim 26, further comprising an oil sump formed in each bearing housing, and wherein at least one of the fan fans is disposed adjacent to each oil sump.